

Fish Facilities Hydrodynamics Fisheries

How it all Fits

South Delta Fish Facilities Forum
September 23, 2003

We can't ignore understanding South Delta Relationships and Fish Facilities

- ESA
- CALFED ROD
- CVP/SWP Biological Opinions
- CVPIA Tracy Improvement Mandates
- CBDA Science and IEP
- 8500 SDIP
- Etc.

South Delta Relationships

Proposed and On-Going Studies

- Interagency Ecological Program
 - Delta focus
- South Delta Fisheries/Hydrodynamics
 - Near and far field focus
- CHTR
 - Facility focus
- Fish Facility Evaluation/Development



The map displays the Sacramento-San Joaquin River Delta, with major waterways and pumping plants labeled. A large olive-green area covers the central and eastern parts of the delta, labeled 'Far-Field Zone of Influence'. A smaller green area near the Tracy Pumping Plant is labeled 'Near-Field Zone of Entrainment'. A red area at the Tracy Pumping Plant is labeled 'Facility Entrainment'. A red arrow labeled 'CHTR Salvage' points from the facility area towards the far-field zone. A purple area near the Tracy Pumping Plant is labeled 'Pre-Screen Entrainment'. The map also shows various tracts, including Barker, Blough, Hastings, Delta Cross Channel, New Hope, Leland, Ranch, Beach, and Lodi. Other locations include Pittsburg, Mantecan, and South Bay Pumping Plant.

Far-Field “Zone of Influence”



Near-Field “Zone of Entrainment”

**CHTR
“Salvage”**

Pre-Screen “Entrainment”

Facility “Entrainment”

LEGEND

-  Sacramento, San Joaquin and Mokelumne Rivers
-  Delta Waterways

Understanding South Delta Relationships while Developing Improved Technologies will Lead to Cost Effective Solutions

South Delta Relationships

“KNOBS”

- Pumping Operations
- CCF Operations
- Fish Facilities
- Barrier Operations
- Delta Diversions
- Delta Inflow/Outflow
- DCC

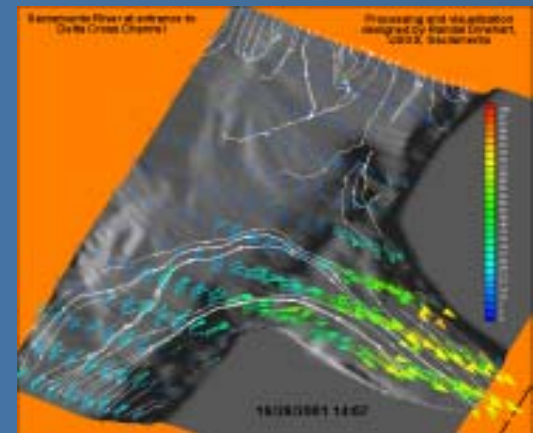
“FACTORS”

- Tides
- Diel Differences
- Seasonality
- Water Quality
- Fish Lifestage
- Hydrology
- Habitat Restoration
- Salvage Efficiency
- Etc...!

South Delta Fisheries/Hydrodynamics

Objective:

- To determine how South Delta operations influence fish movements;
- To determine if there are feasible gate, diversion, barrier, or Delta facility operations to reduce fish impacts while meeting delivery and water quality objectives



South Delta Fisheries/Hydrodynamics Facility Planning Implications

- What fish facility operations are best?
Gulp, sip, LHPP, short circuit, etc.
- Are existing facility operations flexible enough to operate for delivery and fish requirements?
- Salvage facilities or exclusion screens?
- Benefits of CCF Intertie?
- Benefits of joint operations?

Fish Facility Technology Development/Demonstration

Objectives:

- Improve facility fish protection
- Improve facility reliability
- Develop new technologies
- Demonstrate new technologies
- Agency acceptance



Fish Facility Technology Development/Demonstration *Facility Planning Implications*

- Can it meet operational requirements?
- How does fish survival and entrainment differ from existing?
- Infrastructure requirements?
- Operations planning?
- Incremental cost/benefit?
- Maintenance expectations/costs?
- CHTR expectations?

CHTR

Objective:

- Determine what factors influence delta smelt survival in the salvage process and determine if it is reasonable to design facilities around this species



CHTR

Facility Planning Implications

- Should we design for delta smelt?
- Can we design better CHTR systems?
- What are cost implications?
- Should we explore alternative facilities or operations?

Fish Facility Improvements

Objectives:

- Keep the existing fish facilities operating as efficiently as possible;
- Improve to meet delivery requirements
- Satisfy regulatory responsibilities
- Respond to a changing aquatic community;
- Replace aging facility components to improve safety and reliability



Fish Facility Improvements

Facility Planning Implications

- Lots of real data!
- Maintenance insights based on improvements
- Good baseline for new facility comparison
- Ongoing investigations help focus on problem areas



EWA Relationships...

Objective:

- Release water while reducing South Delta CVP/SWP exports to reduce facility impacts on fisheries (direct or indirect)

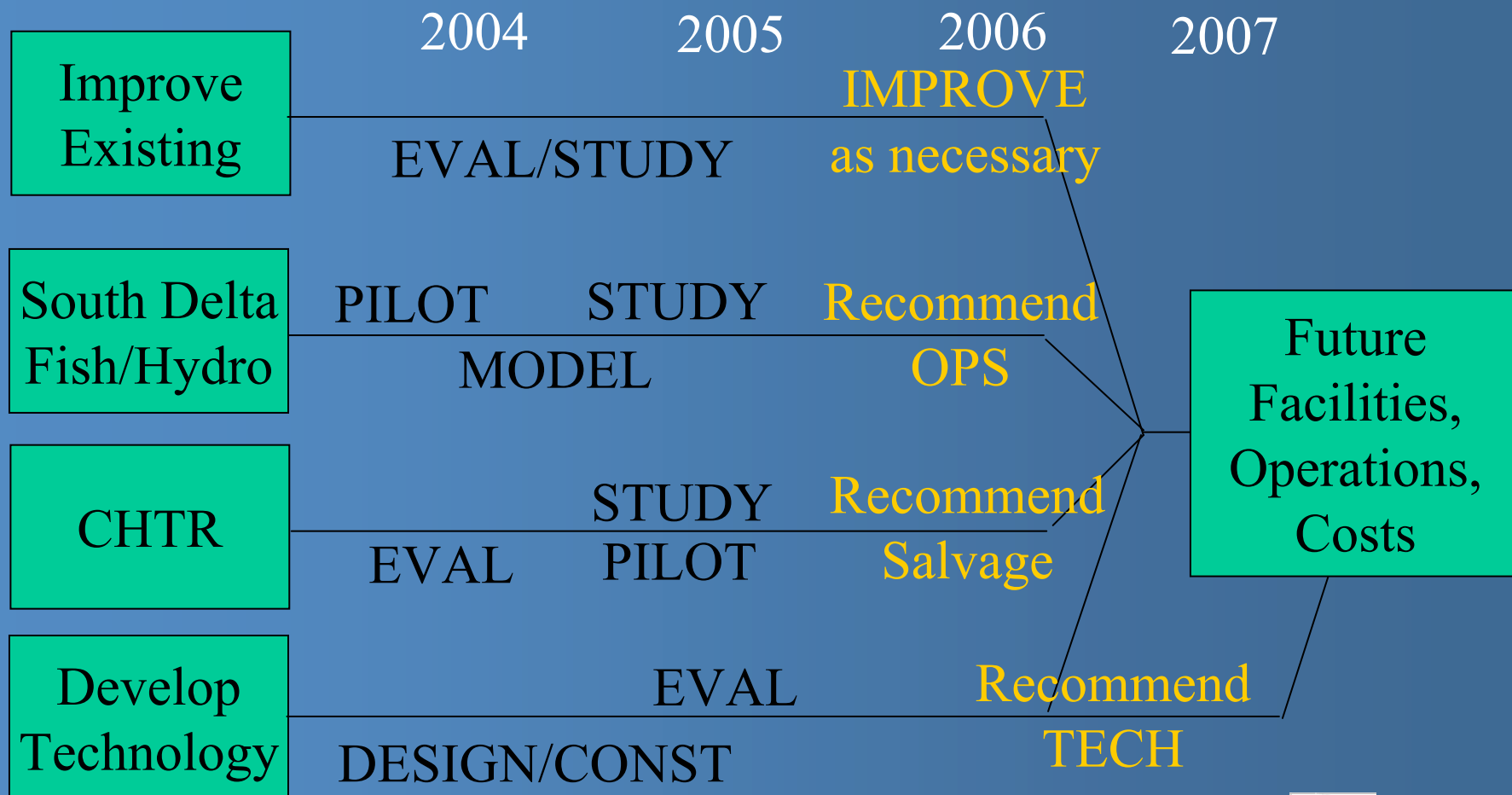


EWA

Facility Planning Implications

- Can water releases move fish out of harms way?
- Can facilities and their operations be designed to mitigate direct or indirect losses without using EWA?
- Is it best to use EWA for delta smelt and protect other fish with screens?

Parallel Investigations will lead to informed and timely fish facility decisions



10/2/2003